

Claims

- [c1] 1. A bicycle power supply apparatus comprising:
a battery unit for storing power from a power supply and for supplying power to electrical components;
a power switch operatively coupled to the battery unit for selectively switching power from the battery unit to the electrical components; and
a first switch control unit that receives power from the power supply and controls the power switch according to the power received from the power supply.
- [c2] 2. The apparatus according to claim 1 wherein the first switch control unit is structured to receive power from the power supply in parallel with the battery unit.
- [c3] 3. The apparatus according to claim 1 wherein the battery unit is structured to receive power from an alternating current generator.
- [c4] 4. The apparatus according to claim 3 further comprising a first rectifier coupled to the battery unit that converts alternating current received from the alternating current generator to direct current that is stored in the battery unit.

- [c5] 5. The apparatus according to claim 4 wherein the first switch control unit comprises:
a capacitance; and
a second rectifier that converts alternating current received from the alternating current generator to direct current that is stored in the capacitance.
- [c6] 6. The apparatus according to claim 5 wherein the first switch control unit provides a signal to turn on the power switch when a voltage of the capacitance is above a predetermined level.
- [c7] 7. The apparatus according to claim 1 further comprising:
a motion sensor; and
a second switch control unit that controls the power switch in response to signals from the motion sensor.
- [c8] 8. The apparatus according to claim 7 wherein the second switch control unit provides a signal to turn on the power switch when the motion sensor senses motion.
- [c9] 9. The apparatus according to claim 7 wherein the second switch control unit provides a signal to turn off the power switch when the motion sensor does not sense motion.

- [c10] 10. The apparatus according to claim 9 wherein the second switch control unit provides a signal to turn off the power switch only when the motion sensor does not sense motion for a predetermined time interval.
- [c11] 11. The apparatus according to claim 7 wherein the motion sensor senses motion based on signals from an alternating current generator.
- [c12] 12. The apparatus according to claim 11 wherein the second switch control unit provides a signal to turn off the power switch only when the motion sensor does not sense signals from the alternating current generator for a predetermined time interval.
- [c13] 13. The apparatus according to claim 7 wherein the battery unit powers the second switch control unit.
- [c14] 14. The apparatus according to claim 13 wherein the battery unit powers the second switch control unit through the power switch.
- [c15] 15. A method of providing power from an alternating current generator to electrical components comprising the steps of:
storing power from the alternating current generator in a battery unit;
providing a power switch for selectively switching power

from the battery unit to the electrical components;
storing power from the alternating current generator in a switch control unit;
providing a signal for turning on the power switch when power stored in the switch control unit is above a predetermined level;
detecting whether a bicycle component is moving; and
providing a signal for turning off the power switch when the bicycle component is not moving.

- [c16] 16. The method according to claim 15 wherein the step of providing a signal for turning off the power switch comprises the step of providing a signal for turning off the power switch only when the bicycle component is not moving for a predetermined time interval.
- [c17] 17. The method according to claim 15 further comprising the step of providing a signal for turning on the power switch when the bicycle component is moving.
- [c18] 18. The method according to claim 15 wherein the detecting step further comprises the step of detecting whether the alternating current generator is generating alternating current.
- [c19] 19. The method according to claim 15 wherein the step of providing a signal for turning off the power switch is

performed by a switch control unit that is powered by the battery unit.

- [c20] 20. The method according to claim 15 further comprising the step of providing a signal for turning off the power switch when power stored in the switch control unit is below a predetermined level.